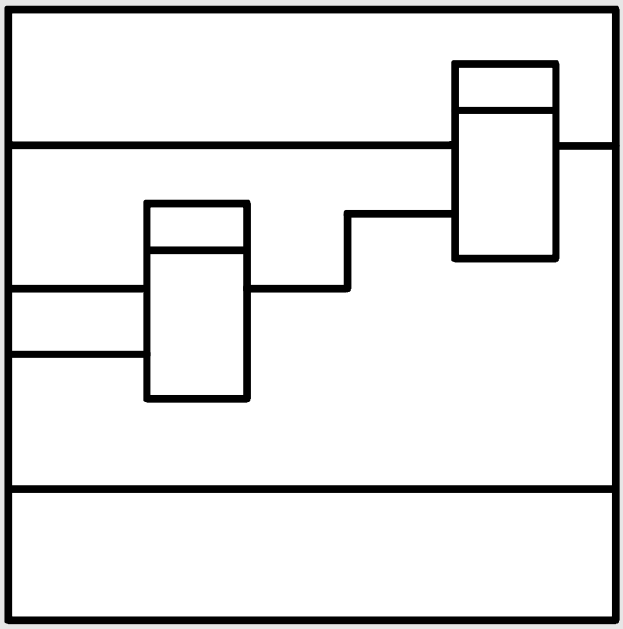
SIMADYN D
Digital Control System

User Manual

Buffer memory module MM3



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User Manual, Buffer memory module MM3

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1	Buffer memory module MM3	02.93
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We have checked the contents of this Manual to ensure that they coincide with the described hardware and software. However, deviations cannot be completely ruled-out, so we cannot guarantee complete conformance. However, the information in this document is regularly checked and the necessary corrections included in subsequent editions. We are thankful for any recommendations or suggestions.

Contents

Warning information 1
1. Ordering information 3
2. Function description 3
    2.1. General information 3
3. Board design 5
4. Important application information 5
5. Technical data 6
    5.1. General information 6
    5.2. Power supply 6
    5.3. Current drain 6
6. STRUC mask of the MM3 6
7. Attachments 7
    7.1. Block diagram 7
    7.2. Layout diagram 7
8. ECB instructions 9

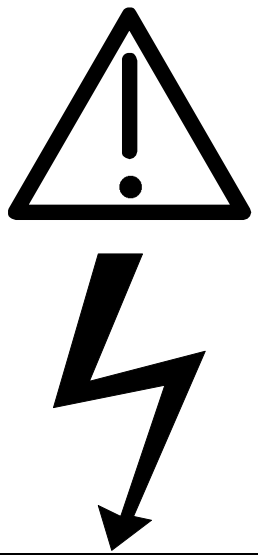
N O T E !

The information in this Manual does not purport to cover all details or variations in equipment, nor to provide for every possible contingency to be met in connection with installation, operation or maintenance.

Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, please contact your local Siemens office.

Further, the contents of this Manual shall not become a part of or modify any prior or existing agreement, committment or relationship. The sales contract contains the entire obligation of Siemens. The warranty contained in the contract between the parties is the sole warranty of Siemens. Any statements contained herein do not create new warranties nor modify the existing warranty.

Warning information



W A R N I N G !

Electrical equipment has components which are at dangerous voltage levels.

If these instructions are not strictly adhered to, severe bodily injury and material damage can result.

Only appropriately qualified personnel may work on this equipment or in its vicinity.

This personnel must be completely knowledgeable about all the warnings and service measures according to this User Manual.

The successful and safe operation of this equipment is dependent on proper handling, installation, operation and maintenance.

Definitions

* **QUALIFIED PERSONNEL**

For the purpose of this User Manual and product labels, a „Qualified person“ is someone who is familiar with the installation, mounting, start-up and operation of the equipment and the hazards involved. He or she must have the following qualifications:

1. Trained and authorized to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety procedures.
2. Trained in the proper care and use of protective equipment in accordance with established safety procedures.
3. Trained in rendering first aid.

* **DANGER**

For the purpose of this User Manual and product labels, „Danger“ indicates death, severe personal injury and/or substantial property damage will result if proper precautions are not taken.

* **WARNING**

For the purpose of this User Manual and product labels, „Warning“ indicates death, severe personal injury or property damage can result if proper precautions are not taken.

* **CAUTION**

For the purpose of this User Manual and product labels, „Caution“ indicates that minor personal injury or material damage can result if proper precautions are not taken.

* **NOTE**

For the purpose of this User Manual, „Note“ indicates information about the product or the respective part of the User Manual which is essential to highlight.

C A U T I O N !

This board contains components which can be destroyed by electrostatic discharge. Prior to touching any electronics board, your body must be electrically discharged. This can be simply done by touching a conductive, grounded object immediately beforehand (e.g. bare metal cabinet components, socket protective conductor contact).

W A R N I N G !

Hazardous voltages are present in this electrical equipment during operation.

Non-observance of the safety instructions can result in severe personal injury or property damage.

It is especially important that the warning information in all of the relevant Operating Instructions are strictly observed.

1. Ordering information

MM3:	6DD 1611-0AF0
Antenna for inside use:	Hopf Elektronik , Nottebohmstr.41, 58511 Lüdenscheid FG443610 internal antenna 4436 (Long Distance)
Antenna for external use:	Hopf Elektronik , Nottebohmstr.41, 58511 Lüdenschaid FG441800 external antenna 4418

2. Function description
2.1. General information

Board MM3 is used in the SIMADYN D system for processor board data transfer and real time counting. It includes two memory blocks, each 64 kbyte, a 16-bit microprocessor 80C186-8MHz, which decodes the time signals, the associated peripherals and a 2-kbyte dual port RAM.

Each of the two buffer memory blocks is 64 kbyte, and has a 32 k * 16 organization. One buffer memory area can be accessed via the L bus, and the other via the C bus. Access is either bytewise or wordwise. The processor board, which is inserted to the left of the buffer memory board, initializes and checks both buffer memories. MM3 must be configured so that it is located next to the first processor module i.e. at slot 3.

The MM3 buffer memory module has no bus termination.

The integrated clock module counts the time, independent of other components, is quartz-clocked, and buffered from the rack battery, so that the the time is continually updated, even if the subrack is not operational. The integrated processor ensures that the time in this block is as accurate as possible. If a time signal is available, this is decoded, and the internal clock is synchronized.

Presently, one of two different time signals is used for synchronization (this is defined in the STRUC mask when configuring the system).

The first signal is the so-called DCF-77 radio signal, which can be received everywhere in central Europe. An external antenna is required, as the rooms in which SIMADYN D is used, are generally screened or accomodate noise emitting equipment. The external antenna must be mounted outside the room, and oriented towards Frankfurt/Main, where the time signal transmitter is located.
(The direction is specified on the antenna housing). The antenna is connected using BNC socket X7 on the front panel.

The second signal is the audible IRIG-B signal which is transmitted via cable. This signal is especially used in USA and Canada, but can also be used in other regions when special generators are used. In this case, high-precision clocks can be used as time transmitter; however, the accuracy can be somewhat less than for the DCF-77 radio signal. Socket X6 is provided on the front panel for connecting the IRIG-B signal cable.

The time is indicated on a 7-segment LED displays on the front panel. They are mounted horizontally. The following is displayed (from the top to the bottom): Date (day of the month and month) and time (hours, minutes and seconds). A flashing display indicates that the time might be incorrect (e.g. after switch-on).

The time can also be manually set. Two buttons are used on the front panel. The cursor is moved with the upper key (identified by a flashing display). A one is added to the value at the cursor position with the lower key (for seconds, the value is set to zero).

Notes

1. For the DCF-77 signal, the time telegram lasts one minute, thus, the display can flash for up to two minutes even for perfect receptions, until the complete telegram has been received.

2. The standard IRIG-B signal unfortunately does not contain clear information regarding the date, but only the sequence of the days in the year (no differentiation as far as a leap year is conccerned). Thus, date information could be incorrect. This is also identified by a flashing display and must be corrected using the keys.

3. The board is initialized from processor 1. This is realized at run-up in the rack if the MM3 was configured in the master program. Only then is the buffer memory enabled and the time displayed at the front panel.

The time is transferred to the dual port RAM (only accessible from the L bus). The time can be read-out of the dual port RAM. This is realized by the RTC001 function block. As far as the functional scope is concerned, this replaces the existing RTC block. For more information, refer to the module catalog.

LEDs H20-H23 are provided on the front panel. They indicate the status of the time receiver. The individual LEDs have the following significance:

H20	green	lit	The board is initialized for receiving DF77 signals
		dark	The board is initializied for receiving IRIG-B signals
H21	red	flashes every second	The time signal is being received
		lit	Signal has no information - check signal cable !
H22	green	dark	The time signal does not contain correct information
		lit	The information comes minimum of 10 seconds in the correct format
H23	red	lit	Error in the time telegram
		dark	Decoding running

The MM3 routes the RDYIN signal externally. This line can also be activated from the processor modules. This is realized by connector X5 on the board. Relay contacts are connected here and thus, the output is electrically isolated. The relay contacts are closed in the operating status, and are open for **at least 100 ms** if a fault condition develops (even with the subrack switched-out). The voltage at the relay contacts may not exceed 60 V. During switching, the current must not exceed 0.5 A, and the maximum switching capability is 20 W.

The double test socket for the reset signal (X10/X11) is used to reset the internal processor, and may not be used during operation.

3. Board design

The MM3 buffer memory board has the following features:

* Local- and communications bus connection (L- and C bus)
  each with 96-pin connector (ES902C) with SIMADYN D control bus assignment
* 64-Kbyte RAM for the local bus
* 64-Kbyte RAM for the communications bus
* Time buffering using the subrack back-up battery
* Dual port RAM for transferring time
* 10, 7-segment LED displays for time (H1 to H10).
  Format: Day, month, hour, minutes, seconds
* 2 keys for manually setting the clock if a time signal is not used.
* 4 LEDs for status displays (H20 to H23)
* Relay contacts for the system error signal (X5)
* 1 double test socket for the reset signal (X10 / X11) for resetting the board

4. Important application information

The MM3 buffer memory board may only be used in a SIMADYN D subrack. The subracks must be equipped with bus terminating modules.

The board must be tightly screwed into the subrack to ensure perfect operation (even during start-up).

If the board is inserted in an adapter for test purposes, the front panel must be connected to the housing through a short cable.

It is not permissible that the board is either inserted or withdrawn with the subrack power supply switched-in.

5. Technical data

5.1. General information

Insulation group	A acc. to VDE 0110 § 13, Group 2 at 24 V DC, 15V DC, 5V DC
Ambient temperature	0 to +55 degrees C
Storage temperature	-40 to +70 degrees C
Humidity rating	F acc. to DIN 40050
Altitude rating	S acc. to DIN 40040
Mechanical stressing	Installation in stationary equipment which is not necessarily vibration-free
Packaging system	ES 902 C
Dimensions	233.4 mm * 220 mm
Board width	1 slot = 20.14 mm
Weight	approx. 700 g

5.2. Power supply

Potential	Rated voltage	Minimum	Maximum
VCC	+5 V	+4.75 V	+5.25 V
+15V	+15 V	+14.4 V	+15.6 V
VCCR	+3.4 V	+2.2 V	VCC

5.3. Current drain

Voltage	Max. current drain
+15 V	50 mA
+5 V	600 mA
+3.4 V	0.02 mA

6. STRUC mask of the MM3

```
        :  MM3          "Radio clock with L/C bus buffer memory"
SIG 1C =   0            "Signal type,0=DCF-77,1=IRIG-B,2=..."
TIM 1K <                "Real-time clock"
```

7. Attachments

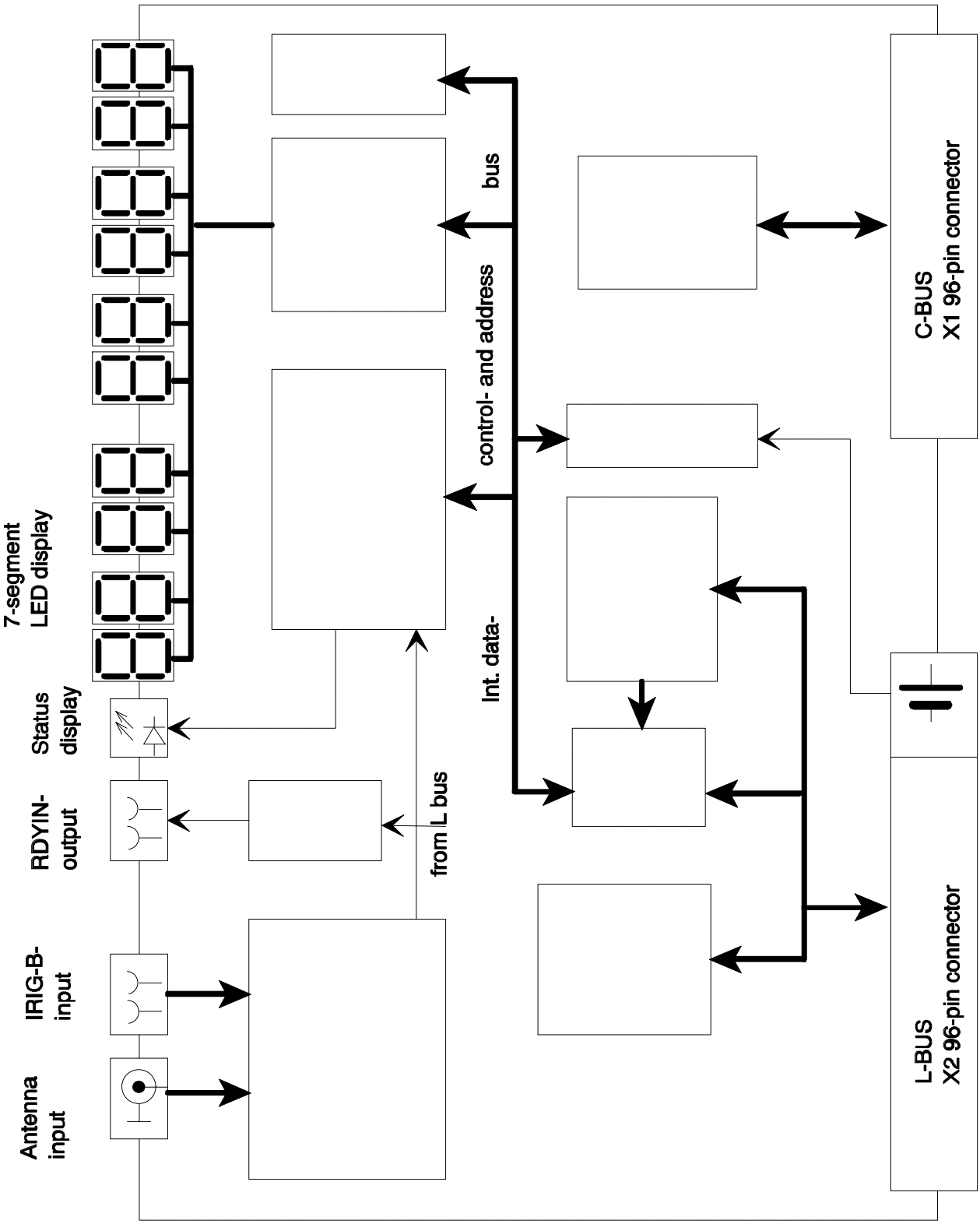
7.1. Block diagram

Block diagram, MM3

7.2. Layout diagram

Layout diagram, MM3	3SE.465 611.9005.00 AO

Block diagram, MM3:



8. ECB instructions

Components which can be destroyed by electrostatic discharge (ECB)

Generally, electronic boards should only be touched when absolutely necessary.

The human body must be electrically discharged before touching an electronic board. This can be simply done by touching a conductive, grounded object directly beforehand (e.g. bare metal cubicle components, socket outlet protective conductor contact.

Boards must not come into contact with highly-insulating materials - e.g. plastic foils, insulated desktops, articles of clothing manufactured from man-made fibers.

Boards must only be placed on conductive surfaces.

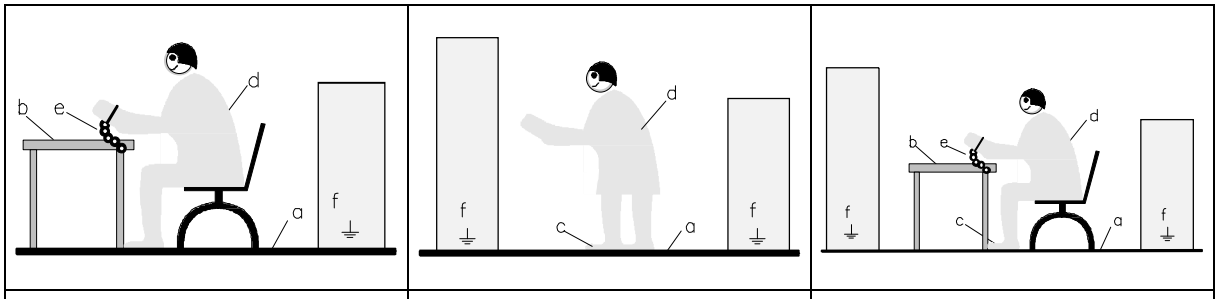
When soldering, the soldering iron tip must be grounded.

Boards and components should only be stored and transported in conductive packaging (e.g. metalized plastic boxes, metal containers).

If the packing material is not conductive, the boards must be wrapped with a conductive packing material, e.g. conductive foam rubber or household aluminum foil.

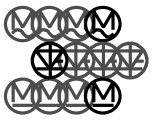
The necessary ECB protective measures are clearly shown in the following diagram.

a = Conductive floor surface
b = ECB table
c = ECB shoes
d = ECB overall
e = ECB chain
f = Cubicle ground connection



Seated	Standing	Standing/sitting

Drives and Standard Products
Motors and Drives Systems Group
Postfach 3269, D-91050 Erlangen



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